

Claims

1. An apparatus comprising:
 - (a) a memory configured to receive a medical diagnostic image representing a neuro axis of a patient;
 - (b) a program stored in the memory and operatively configured to detect and label a plurality of spinal structures in said medical diagnostic image using an iterative process;
 - (c) a processor in communication with the memory to perform the program.
2. The apparatus of claim 1 wherein the program is operatively configured to utilize a region growth algorithm to identify a portion of the medical diagnostic image to analyze for the plurality of spinal structures.
3. The apparatus of claim 1 wherein the program is operatively configured to detect and label a spinal structure based on a landmark, and is further operatively configured to detect and label an additional spinal structure based at least in part on a previously named and detected spinal structure.
4. The apparatus of claim 1 wherein the program is operatively configured to detect and label the plurality of spinal structures based at least in part on a landmark.
5. The apparatus of claim 4 wherein the landmark is a top spinal structure.
6. The apparatus of claim 4 wherein the landmark is a seed.
7. The apparatus of claim 4 wherein the landmark is automatically detected.

8. The apparatus of claim 1 wherein the medical diagnostic image is comprised of a plurality of voxels, and wherein the program is further operatively configured to:
 - (a) identify a plurality of voxels in the medical diagnostic image as candidate spinal structures;
 - (b) apply a spinal structure constraint to identify a series of spinal structures comprising a subset of said candidate spinal structures.
9. The apparatus of claim 8 wherein the program is further operatively configured to detect a plurality of voxels in the medical diagnostic image as candidate spinal structures by performing a calculation comprising comparing a voxel in the medical diagnostic image with a voxel in a second medical diagnostic image wherein the second medical diagnostic image corresponds to a sagittal section adjacent to a second section corresponding to the medical diagnostic image.
10. The apparatus of claim 8 wherein the program is further operatively configured to
 - (a) identify a line defined in part based on a centroid of a candidate spinal structure in the series of spinal structures;
 - (b) identify an additional spinal structure by searching for a local intensity extreme along a region defined in part by the line.
11. The apparatus of claim 10 wherein the region defined in part by the line is defined in further part by extending the line based on an estimate of a position for the additional disc.
12. The apparatus of claim 10 wherein the region defined in part by the line is defined in further part by an additional line, the additional line being parallel to the line.
13. The apparatus of claim 1 wherein the medical diagnostic image corresponds to a superior portion of the neuro axis, and wherein the program is further operatively configured to combine the medical diagnostic image with a second medical diagnostic image corresponding to an inferior portion of the neuro axis.

14. The apparatus of claim 1 wherein the program is further operatively configured to analyze a spinal structure from the plurality of spinal structures.
15. The apparatus of claim 1 wherein the program is further operatively configured to produce a report based at least in part on the naming of the plurality of spinal structures.
16. The apparatus of claim 1 further comprising a printer operable to produce a labeled visual representation of the medical diagnostic image on film.
17. The apparatus of claim 1 further comprising a screen operable to display the labeled visual representation of the medical diagnostic image.
18. The apparatus of claim 1 wherein the program is further operatively configured to automatically generate a prescription using said labeling of the plurality of spinal structures.
19. The apparatus of claim 18 wherein the prescription is to collect additional medical diagnostic images.
20. The apparatus of claim 18 wherein the prescription is for a therapeutic procedure.
21. The apparatus of claim 18 wherein the program is further operatively configured to execute the prescription.
22. The apparatus of claim 20 wherein the apparatus further comprises a therapeutic instrument and wherein the program is operatively configured to execute the prescription using the therapeutic instrument.
23. The apparatus of claim 1 wherein the program is further configured to reconstruct a slice by selectively applying a plurality of reconstruction algorithms based at least in part on the detection and labeling of the plurality of spinal structures.

24. The apparatus of claim 1 further comprising a screen wherein the program is operable to display a visual representation of the medical diagnostic image using a first contrast and a second contrast, wherein the first contrast is used for portions of the visual representation corresponding with bone and wherein the second contrast is used for portions of the visual representation corresponding with soft tissue.
25. The apparatus of claim 24 wherein the first contrast and the second contrast are adjustable.
26. A method comprising:
 - (a) placing an imaging coil external to a neuro-axis of a patient wherein said imaging coil is adapted to a contour of the patient;
 - (b) obtaining a medical diagnostic image of a portion of the neuro-axis of the patient;
 - (c) identifying a position in the medical diagnostic image; and
 - (d) autoprescribing an additional procedure for the identified position.
27. The method of claim 26 wherein the imaging coil is a flexible imaging coil.
28. The method of claim 26 wherein the imaging coil is adherent to the patient.
29. The method of claim 26 wherein the additional procedure comprises obtaining a second medical diagnostic image.
30. The method of claim 26 wherein the additional procedure comprises activation of a robotically actuated therapeutic instrument.
31. The method of claim 26 wherein said imaging coil comprises a localizer.
32. The method of claim 31 wherein the localizer comprises a sheath.
33. The method of claim 32 wherein the imaging coil is movable within the sheath.

34. A localizer system comprising a dye operable to create a marking on a surface of a patient, and a detectable region adapted for creating a reference on a medical diagnostic image corresponding to the marking.
35. The localizer system of claim 34 further comprising fabric.
36. The localizer system of claim 34 further comprising an adhesive.
37. The localizer system of claim 34 wherein the detectable region is fillable.
38. The localizer system of claim 34 wherein the localizer system comprises a plurality of plastic sheets.
39. The localizer system of claim 34 wherein the detectable region comprises a grid.
40. The localizer system of claim 34 wherein the detectable region comprises a movable portion.
41. The localizer system of claim 34 wherein the detectable region is configured to indicate location.
42. The localizer system of claim 34 wherein the detectable region is multimodality compatible.
43. The localizer system of claim 34 wherein the detectable region comprises a first section and a second section.
44. The localizer system of claim 43 wherein the first section comprises a first material and the second section comprises a second material.